VALUE OF CLOSING COMPOUND FRACTURES BY SKIN PLASTIC

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The advantages of early closure of a compound fracture are obvious. Many hospital days, suffering, deformities and lives are saved. Aseptic and antiseptic first aid methods are desirable. Our custom has been to apply a gauze pad, wet with tincture of iodine, mercurochrome, or picric acid solution. The limb is immobilized, the patient is sent to the hospital. If he is not in a state of shock the wound is carefully débrided and disinfected. This is done with a scrupulously careful technic, quite as much as if the intent were to open the abdominal cavity. After débriding the wound, removing grossly contused and contaminated tissue, and freshening the skin edges by paring off a narrow strip all the way around, the wound edges are sutured most carefully and should be very neatly and precisely approximated. Great pains are taken not to invert the edges, but rather to bring them together pointing upward, like the apex of an inverted "V".

Plastic Methods.—In event there is such a loss of substance or œdema that the edges cannot be brought together by usual methods, long, liberating incisions may be made some distance away, in order that the skin edges may be brought together over the exposed bone without undue tension. It is advisable, as a rule, that such liberating incisions be carried through the outer fascial covering of the muscles. We follow this method in order to provide for an improved circulation and to lessen the likelihood of long-standing œdema. If advisable, this work can be done under local anæsthesia. The patient is always given a prophylactic injection of antitetanic serum. The treatment outlined is routine with myself and my surgical associate, Dr. E. B. Henson, at the Charleston General Hospital. In more than one hundred cases of compound fracture treated by early skin closure, primary union was obtained in more than 90 per cent. of the cases.

The following illustrative cases are cited:

Case I.—A woman, sixty-eight years of age, in crossing a dusty road in midsummer, was knocked down by a car, receiving a compound fracture of the tibia and a simple fracture of the fibula. The tibia broke through the skin and protruded for at least two inches. She was taken to a nearby hospital and I was called to see her shortly thereafter. X-ray showed considerable comminution and overriding of the broken bones. Inasmuch as her general condition was fair, she was at once given ether anæsthesia and the wound disinfected as thoroughly as possible with fresh tincture of iodine, the badly lacerated and traumatized tissues were débrided, a portion of the grossly contaminated bone was pared away with a rongeur. The wound was carefully closed with silkworm-gut sutures. These were placed close together, not over one-fourth inch apart, and were allowed to remain in for approximately two weeks. Primary union took place. Bony union was delayed, but finally took place.

CASE II.—A mine foreman was sent to me at the Charleston General Hospital. This man was unwell at the time of his injury, his trouble having been diagnosed as pulmonary tuberculosis of a chronic type. He had a bad productive cough and had had the same for many months. He suffered frequently from severe pains in his chest. He was the victim of a slate fall and, when looked over, was found to have a simple fracture of the left radius, one of the left femur, and a very bad compound fracture involving both tibia and fibula of the right leg. There was considerable destruction and loss of tissue over the tibia at the point of fracture. This man was

FIG. 1.—Compound Fracture of Tibia with Extensive Exposure of Bone at Point of Fracture.

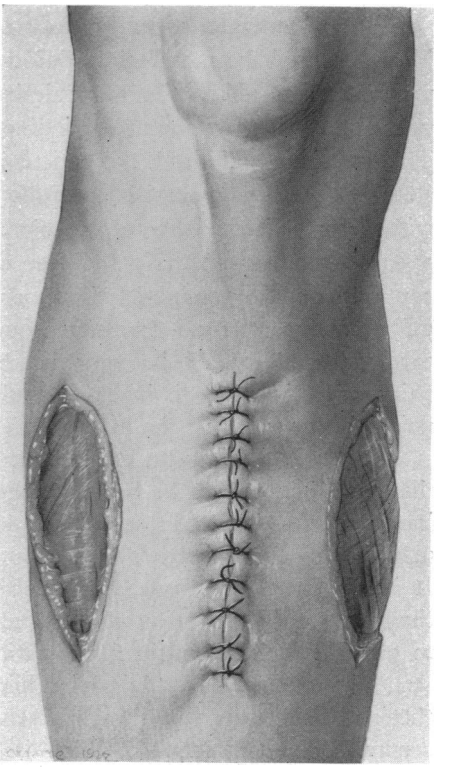

FIG. 2.—Showing Liberating Lateral Skin Incisions, Allowing Suture of Skin Wound Over Point of Fracture.

suffering great pain and was in a state of most profound shock. Cold perspiration, rapid, weak pulse, running 120 to 130 per minute. His general condition was so poor, even at that time, that his teeth were covered with sordes and his gums showed the presence of a severe form of pyorrhœa. He looked to be almost moribund. Splints were applied and the patient was put to bed. He was treated for shock. Glucose solution was given intravenously and hot water bags applied. Over the compound fracture was applied a dressing of gauze and cotton, wet with a two per cent. solution of mercurochrome.

The shock was severe and persistent. However, the next day the patient showed some improvement. At this time he was given 1500 units of antitetanic serum; still his condition continued poor. Three days later at noon, assisted by the resident physician on the traumatic service, I first débrided and then closed this compound fracture. The operation was done in the patient's room without moving him from his bed. The work was done under novocaine anæsthesia. Partly owing to loss of substance and partly

owing to swelling, large liberating incisions had to be made on either side of the leg. The fracture of the tibia was essentially a transverse one, and as the relative position of the ends was not good, it was improved by use of a bone skid. The wound caused by the original injury was snugly closed. This brought healthy skin over all of the exposed bone. The lateral liberating incisions on either side of the leg were approximately four inches in length and left a hiatus as much as an inch and a half in width at certain points.

For fear that these gaps in the skin might become grossly infected, they were treated with Carrel-Dakin solution for forty-eight hours. After that every three hours for a week. From this time on his granulating areas were dressed every other day with five per cent. balsam of peru in castor oil.

He stood the operation very well and had a fairly smooth convalescence. Most of the sutures were removed at the end of the second week. A few of them were allowed to remain for a few days longer for fear that there might not be firm union.

One month after injury this man's leg, so far as the skin is concerned, was so perfectly healed that it was hard to find the scar where his original injury was received. The liberating incisions on the side of the leg showed a smooth scar a little over one-fourth inch in width.

The leg is not swollen, the bony alignment is fair, and there is fibrous union. The man's chest condition has improved. Probably the rest in bed has helped that. At the end of the second month there was firm bony union.

CASE III.—Compound fracture of tibia and simple fracture of fibula; duration eight hours; wound disinfected, débrided and sutured, unfortunately under more tension than was desirable. Stay sutures were of silkworm gut placed quite close together. The site of the fracture had undergone partial healing so that healthy granulation tissue covered the bone; later, skin grafting was resorted to, the bony union was primary in spite of the fact that the skin did not hold. The protection afforded by the skin gave time for the building of a defensive wall at the seat of fracture.

CONCLUSIONS

After a rather extended experience with the methods above described we have found that the results are immeasurably better than when treated by the open method. The application of ordinary plastic methods serves to cover and protect the bone at the site of fracture and to prevent not only prolonged invalidism, but deformity and the formation of dense scar tissues directly over the bone. Such tissue breaks down easily and is always a menace.